

EXAMPLE 3

The following Formulation J is one example of a dentifrice according to the subject invention, in the form of a liquid gel, for reducing dental nerve and/or dentin sensitivity:

Formulation J	
Ingredient	wt./wt. %
Hydroxy EthylCellulose	1.000%
PEG-8	3.000
Glycerin (99.5%)	10.000
Purified Water	18.000
Potassium Nitrate	5.000
Sodium Fluoride	0.243
HAMPOSYL™ L-30 (30%)	4.000
Xanthan Gum	0.300
Sorbitol (70%)	35.451
Sodium Saccharin	0.500
SYLODENT™ 15 (thickening silica from W. R. Grace & Co.)	8.000
SYLODENT™ 750 (abrasive silica from W. R. Grace & Co.)	10.000
Dye(s)	0.006
SLS (30% solution)	3.000
Flavoring	1.500
	100.000%

Formulation J was prepared as follows: The carboxyethyl cellulose was dispersed in the PEG-8 and glycerin using a mixer. In a separate container, the KNO_3 was dissolved in the water and sorbitol and mixed until dissolved. NaF was added to the water mixture and mixing was continued for 25 minutes. The water/sorbitol/ KNO_3 /NaF phase was added to the carboxyethyl cellulose/PEG-8/glycerin mixture and mixed for 10 minutes. The xanthan gum was slowly added and mixed under high shear for 15 minutes. Hamposyl L-30, sodium saccharin, Sylodent 15, Sylodent 750, dyes (FD&C Blue #1 and D&C Yellow #10) were added; this resulting mixture was mixed until homogenous. The flavor was dissolved in the SLS and mixed for 5 minutes. The flavor/SLS mixture was added to the batch and mixed for 10 minutes. The resulting gel was deaerated to remove entrapped air bubbles.

What is claimed is:

1. An oral liquid composition for reducing nerve sensitivity comprising: (a) from about 0.01% by weight to about 5% by weight of an orally-acceptable, soluble potassium salt; (b) from about 0.01% by weight to about 10% by weight of a sodium ($\text{C}_8\text{-C}_{24}$) alkylsulfate; (c) from about 0.01% by weight to about 20% by weight of an orally-acceptable polar surfactant, said surfactant selected from the group consisting of a ($\text{C}_6\text{-C}_{30}$), fatty acid mono or diester of ethoxylated sorbitan, a ($\text{C}_6\text{-C}_{30}$) fatty acid diester of polyethylene glycol, a sodium salt of a ($\text{C}_6\text{-C}_{30}$) fatty acyl sarcosinate, a ($\text{C}_6\text{-C}_{30}$) fatty acyl ester of sarcosine acid, a sodium salt of a ($\text{C}_6\text{-C}_{30}$) fatty acyl taurate, a sodium salt of a ($\text{C}_6\text{-C}_{30}$) fatty acyl methyltaurate, a ($\text{C}_6\text{-C}_{30}$) fatty acyl ester of taurine, a ($\text{C}_6\text{-C}_{30}$) fatty acyl ester of methyltaurine acid, a ($\text{C}_6\text{-C}_{30}$) fatty acyl betaine, a ($\text{C}_6\text{-C}_{30}$) fatty acyl quaternary ammonium chloride, dimethicone copolyols, polydimethylsiloxane phosphate esters, polydimethylsiloxane copolyol phosphate esters, polydimethylsiloxane phosphobetaines, polydimethylsiloxane copolyol phosphobetaines, polydimethylsiloxane taurates, polydimethylsiloxane copolyol taurates, acetylated polydimethylsiloxane copolyols, and polydimethylsiloxane quaternium compounds; and (d) an orally-acceptable aqueous

vehicle comprising from about 50% by weight to about 85% by weight water; wherein the potassium salt is dissolved in the composition and wherein the molar ratio of the surfactant of (c) to the sodium ($\text{C}_8\text{-C}_{24}$) alkylsulfate is greater than or equal to about 1:1 such that when a.), b.), c) are dissolved in d.), the resultant composition is free of visible potassium alkyl sulfate precipitates.

2. The oral liquid composition according to claim 1, wherein the soluble potassium salt of the composition comprises a potassium pyrophosphate salt in an amount effective, optionally in combination with other pyrophosphate salts, to remove or loosen plaque and/or stains when the composition is orally applied to a dental surface.

3. The oral liquid composition according to claim 2, wherein the soluble potassium salt of the composition comprises soluble potassium salt that possesses activity in reducing dental nerve and/or dentin sensitivity in an amount effective to reduce dental nerve and/or dentin sensitivity when the composition is orally applied to a dental surface.

4. The oral liquid composition according to claim 3, wherein the soluble potassium salt that possesses activity in reducing dental nerve and/or dentin sensitivity is potassium nitrate.

5. The oral liquid composition according to claim 4, further comprising a flavoring that does not comprise a substantial amount of menthol.

6. The oral liquid composition according to claim 5 wherein the flavoring that does not comprise a substantial amount of menthol is a mint flavoring.

7. The oral liquid composition according to claim 1, wherein the soluble potassium salt is selected from the group consisting of a potassium pyrophosphate salt, potassium nitrate, and mixtures thereof.

8. An oral composition in the form of a rinse for reducing dental nerve and/or dentin sensitivity comprising (a) from about 0.1% to about 5% potassium nitrate; (b) from about 0.02% to about 2% SLS; (c) from about 0.1% to about 20% by weight of an orally-acceptable polar surfactant, said surfactant selected from the group consisting of a ($\text{C}_6\text{-C}_{30}$) fatty acid mono diester of ethoxylated sorbitan, a ($\text{C}_6\text{-C}_{30}$) fatty acid diester of polyethylene glycol, a sodium salt of a ($\text{C}_6\text{-C}_{30}$) fatty acyl sarcosinate, a ($\text{C}_6\text{-C}_{30}$) fatty acyl ester of sarcosine acid, a sodium salt of a ($\text{C}_6\text{-C}_{30}$) fatty acyl taurate, a sodium salt of a ($\text{C}_6\text{-C}_{30}$) fatty acyl methyltaurate, a ($\text{C}_6\text{-C}_{30}$) fatty acyl ester of taurine, a ($\text{C}_6\text{-C}_{30}$) fatty acyl ester of methyltaurine acid, a ($\text{C}_6\text{-C}_{30}$) fatty acyl betaine, a ($\text{C}_6\text{-C}_{30}$) fatty quaternary ammonium chloride, dimethicone copolyols, polydimethylsiloxane phosphate esters, polydimethylsiloxane copolyol phosphate esters, polydimethylsiloxane phosphobetaines, polydimethylsiloxane, copolyol phosphobetaines, polydimethylsiloxane taurates, polydimethylsiloxane copolyol taurates, acetylated polydimethylsiloxane copolyols, and polydimethylsiloxane quaternium compounds, polydimethylsiloxane copolyol quaternium compounds; and (d) an orally-acceptable aqueous vehicle comprising from about 50% by weight to about 85% by weight water; wherein the potassium salt is dissolved in the composition and wherein the molar ratio of the surfactant of (c) to the sodium ($\text{C}_8\text{-C}_{24}$) alkylsulfate is greater than or equal to about 1:1 such that when a.), b.), c.) are dissolved in d.), the resultant composition is free of visible potassium alkyl sulfate precipitates.

9. An oral composition in the form of a rinse for removing or loosening plaque and/or stains from dental surfaces comprising (a) from about 0.1% to about 5% of a potassium salt selected from the group consisting of dipotassium pyrophosphate, tetrapotassium pyrophosphate, tripotassium pyrophos-